

Remarks

Claim 26 has been amended so as to reflect full support from the disclosure of priority document, JP 11-198351. Support for the amendments to claim 26 may be found in the specification of the subject application at, *inter alia*, page 4, lines 15-23 and page 7, lines 29-32 and in the specification of the priority document JP 11-198351 at, *inter alia*, paragraphs [0003], [0010] and [0015]. Accordingly, no new matter has been introduced by the amendment to claim 26. After entry of the amendments, claims 26, 27 and 30 to 33 will be pending.

The undersigned would like to thank the Examiner for taking the time to discuss with the undersigned on May 17, 2006 the patentability of the pending claims in light of the rejections posited by the Examiner in the current office action.

1. Rejections under 35 U.S.C. § 112, first paragraph

Claims 26, 27 and 30-33 are rejected because the Examiner asserts that the specification does not provide support for a lithium battery including a liquid electrolyte comprising divinyl sulfone. In making this rejection, the Examiner relies on a statement in the specification that the divinyl sulfone forms a passivation film at the surface of the anode.

Applicants respectfully disagree with the Examiner's rejection of the above-recited claims as lacking support for a liquid electrolyte. The specification contains numerous references to the fact that the battery of the invention contains a liquid electrolyte. For example, at page, 3, lines 16-20, it is stated that "there is provided a non-aqueous electrolyte comprising (i) a non-aqueous solvent and (ii) an electrolyte salt dissolved therein and (iii) a vinyl sulfone derivative...." Here, the term "solvent" and the phrase "dissolved herein" clearly implies a liquid electrolyte. Page 5, lines 14-16 state that the "non-aqueous solvent used in the present invention is preferably composed of a high dielectric solvent and a low viscosity solvent." Here, the terms "high dielectric" and "low viscosity" are only associated with liquids. Page 5, lines 22-35 lists several exemplary low viscosity solvents. Each of these species is a liquid at ambient temperature and atmospheric pressure. Example I-1 describes an electrolyte prepared by the mixing of propylene carbonate (a liquid) with dimethyl carbonate (a liquid). Further, as the

undersigned discussed with the Examiner, Applicants have indicated to the undersigned that the term “electrolyte” as employed in the original Japanese-language specification of the subject application actually means “liquid electrolyte” and a declaration to that effect can be submitted if needed to convince the Examiner of the indisputable fact that the electrolyte in Applicants’ battery is not in a liquid state.

The Examiner appears to reject any consideration of the ample support in Applicants’ specification that the electrolyte is a liquid, based on a single statement in the specification that the “vinyl sulfone derivative having the formula (I) contained in the electrolyte has a function of forming a passivation film at the surface of the carbonaceous material during the charging” (page 4, lines 15-18). Applicants point out to the Examiner that this statement indicates that a passivation film forms only during the charging phase of the battery. This statement in no way contradicts the description of the electrolyte as being in a liquid state during the non-charging (*i.e.*, resting phase) of the battery. In fact, the very statement in the specification by Applicants that the vinyl sulfone may form a film during charging implies that when the battery is not charging, the vinyl sulfone is in a non-film form – *i.e.*, a liquid form. At least for the above-discussed reasons, Applicants request that the Examiner withdraw this rejection.

2. Rejections under 35 U.S.C. § 102

A. § 102(b) / §103(a) - Kato

Claims 26, 27 and 30-33 have been rejected by the Examiner as being anticipated by, or alternatively, as obvious over JP 09-082360 to Kato (“Kato”) as evidenced by the Handbook of Batteries by Linden (“Linden”).

Applicants respectfully disagree with the Examiner’s assessment of the teaching of Kato as it relates to Applicants’ claimed invention. In Applicants’ battery, the divinyl sulfone is dissolved in a liquid electrolyte during the battery’s resting phase and forms a film only during the battery’s charging phase. In the Kato battery, by contrast, the divinyl sulfone is in a solid state during both the battery’s resting phase and charging phase. Accordingly, the two batteries operate quite differently from each other. However, in an effort to expedite prosecution of this

application, Applicants have amended claim 26 to include the feature that the recited divinyl sulfone forms a film at a surface of the recited carbonaceous material during the charging phase of the battery. In contrast to this feature, Kato teaches the deposition of lithium ion conductive electrolyte layer comprising, for example, a polyvinyl sulfone, on the front face of a lithium composite oxide (see, *e.g.*, paragraphs [0023] – [0024], [0037] and [0039]). Kato does not teach or suggest the deposition of the electrolyte layer on a carbonaceous material. Accordingly, Kato cannot anticipate or render obvious Applicants' claimed invention. For at least the above reasons, Applicants respectfully request that the Examiner's rejection of the pending claims over Kato be withdrawn.

B. § 102(a) - Hamamoto

Claims 26, 27 and 30-33 have been rejected as being anticipated by JP 11-329494 to Hamamoto *et al.* ("Hamamoto").

As amended, the subject matter claimed by Applicants is fully supported by the disclosures of JP 11-198351, which is cited as a priority document for the subject application and which has a filing date of July 13, 1999. Applicants have deleted the "about" terms modifying the recitation of the lattice spacing and submit that the issue regarding the specification support for liquid electrolytes is adequately addressed in section 1 above.

Because, as discussed in the Remarks section of this response, the amendments to claim 26 are supported by the disclosures of the priority document, the subject application may rely on the July 13, 1999 filing date of the priority document. This effective filing date is earlier than the November 30, 1999 publication date of the Hamamoto document. As such, Hamamoto cannot be used as § 102(a) prior art against the subject application and Applicants therefore respectfully request that this rejection be withdrawn.

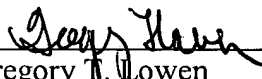
3. Conclusion

Upon consideration of the foregoing, it will be recognized that Applicants have fully and appropriately responded to all of the Examiner's rejections. Accordingly, all claims are believed to be in proper form in all respects and a favorable action on the merits is respectfully requested.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

Except for issue fees payable under 37 C.F.R. 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. 1.16 and 1.17 which may be required, including any required extension of time fees, or to credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **constructive petition for extension of time** in accordance with 37 C.F.R. 1.136(a)(3).

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